

# PROGRAMMABLE MULTISTAGE AMPLIFIER AND RADIO APPLICATIONS THEREOF

## ABSTRACT OF THE DISCLOSURE

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A programmable multi-stage amplifier includes a 1<sup>st</sup> programmable amplifier, a 2<sup>nd</sup> programmable amplifier, and a control module. The 1<sup>st</sup> and 2<sup>nd</sup> programmable amplifiers are coupled in series to amplify an input signal. Each of the 1<sup>st</sup> and 2<sup>nd</sup> programmable amplifiers is operably coupled to receive independent gain control signals from the control module. The control module generates the gain control signals by determining the overall gain desired for the programmable multi-stage amplifier and a corresponding gain for each of the 1<sup>st</sup> and 2<sup>nd</sup> programmable amplifiers. The factors in which the control module makes this determination are based on an optimization of at least one of the power level of the programmable multi-stage amplifier, the noise factor for the programmable multi-stage amplifier, and/or linearity of the programmable multi-stage amplifier.

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